Advanced Technology Directorate

Fostering Future Defense Innovations

U.S. Army Space and Missile Defense Command
Space and Missile Defense Technical Center

The Advanced Technology Directorate (ATD) draws on the research community of universities, businesses, and other government agencies to focus the developing scientific and technology base on challenging problems of missile defense. As pioneering scientific advances emerge from the laboratory, they are evaluated for their potential to give order of magnitude improvements in missile defense and related efforts.

Many of the innovations will have great impact on non-defense, commercial activities. By supporting the small business component of the nation s industrial base, the Advanced Technology Directorate programs also build a technology community that will supply the defense innovations of the future.

Current Advanced Technology Programs

- **Electromagnetic Technologies** The Electromagnetic Technology program conducts first-of-a-kind demonstrations of near-term, high-risk, and innovative technologies, components, and subsystems that permit significant radar performance improvements. Examples of ongoing developments include: the development of advanced counter-countermeasure technology to defeat emerging countermeasure technologies; and the development of a miniature, ultra-fast plasma limiter to isolate sensitive receivers from electronic warfare environments.

- **Advanced Interceptors** Concepts and components are being developed to provide revolutionary systems for kinetic energy intercept, both endoatmospherically and exoatmospherically. ATD is pursuing ideas that will yield size/weight/cost reductions and improve performance of future systems. These efforts include future weapon system concept development, seeker technology, propulsion and divert enhancement devices, communications, power, and enhanced warhead capabilities.

- **Computer Technologies** Emerging computer hardware and software technologies will provide the 21st century warfighter with information superiority. The use of state-of-the-art interface effectors with total spectrum information presentation, autonomous intelligent agents, and self-learning decision aids combined with distributed heterogeneous high-speed processors and databases provide the capability to collect, process, and disseminate a fault-tolerant flow of information/knowledge for distributed cooperative collaboration. Together, these innovative technologies meet the challenges associated with high assurance, widely distributed collaborative information systems.

- **Small Business Innovation Research (SBIR)** Engineers and scientists in ATD support the Missile Defense Agency (MDA), U.S. Army, and other organizations' SBIR programs. The ATD provides current technical expertise to evaluate proposals as well as technically manage a wide variety of efforts in missile defense and other military areas in addition to non-military areas. SBIR efforts have led to significant advances in research and development. In the MDA case, early in 2002 approximately 1000 Phase I proposals were evaluated within ATD and 200 were funded at $70,000 each for 6 months. Many of these will be invited to advance to Phase II for nominally $750,000 and two years work that will provide new, innovative technology for missile defense. Additionally, the SBIR Law provides a sole-source Phase III contract vehicle to accommodate other-than-SBIR federal funding. Information regarding this and other programs at ATD is available at http://www.smdc.army.mil/Contracts/Contracts.html. Inquiries regarding opportunities are welcome.

- **Defense Advanced Projects Research Agency (DARPA)** The DARPA Office within ATD serves as an agent for select DARPA programs and other outside agency programs. Research and development is with cutting-edge technologies that address both traditional SMDC needs and broad national security interests related to the high-risk/high-payoff goals of DARPA and other agencies. Research ranges from small-scale projects to large systems, with contracts going to universities and companies. The DARPA Office provides a unique technical involvement by SMDC with broad scientific research that can be leveraged for space and missile defense purposes.

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0602/0130/1500